Geometry Summer Packet

Directions: This packet reviews concepts you learned in previous math courses. Show all work for each problem, even if you use a calculator. If you need more space, you may attach additional notebook paper. The skills covered in this packet are important for success in Geometry next school year. You will be assessed on these skills during the first week of school.

Name: _____

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Fractions	
1) $2\frac{3}{4}+1\frac{1}{5}-\frac{1}{10}$	2) $3\frac{1}{8}-2\frac{5}{9}+\frac{5}{24}$
3) $1\frac{3}{8}\times 3\frac{1}{3}$	4) $2\frac{1}{7}\div 2\frac{1}{2}$

Solving Equations	
5) $6(6v-6)-5=1+6v$	6) $-4k+2(5k-6)=-3k-39$
7) $10(x+3)-(-9x-4)=x-5+3$	8) $\frac{4x-2}{5}=0.4$

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Translating Word Problems	
9) An online game club charges a $33 membership fee and $2.50 to rent each game. Non-members pay $4 for each game rental. For how many games will the charge be the same?	10) Amanda wants to put a decorative border around her kitchen. Her kitchen is rectangular in shape and although she doesn't remember the exact dimensions of her kitchen, she does remember that the length is 5 more than the width. If the perimeter of the kitschen is 70 feet, what are the dimensions of the kitchen.
11) Suppose that the water level of a river is 36 feet and that it is receding at a rate of 0.5 feet per day. Write an equation for the water level, L, after d days. In how many days will the water level be at 26 feet?	12) Lindsay has five more trading cards than Lena. Yu-Fen has eighth less trading cards than Lindsay. Together they all have 62 trading cards. If Stephen has four times as many trading cards as Yu-Fen, how many more trading cards does Stephen have than the others?

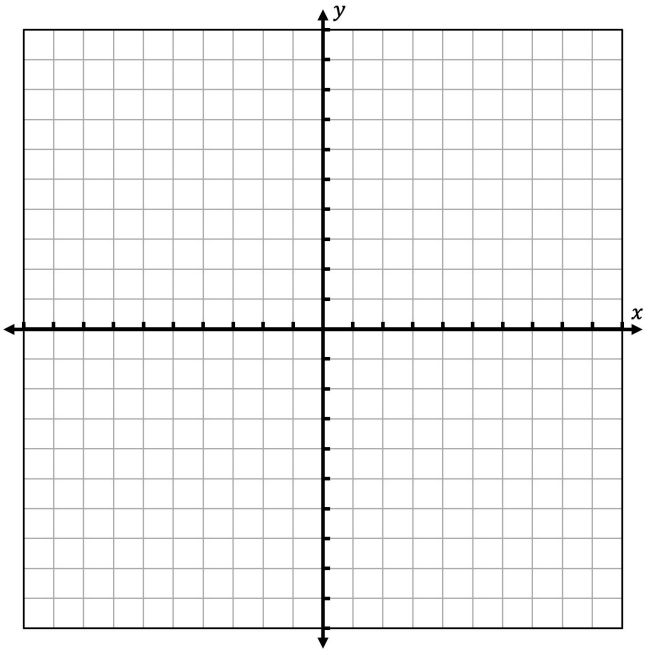
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Linear Equations and Inequalities	
13) What is the slope of the line? $y = -\frac{2}{3}x + 6$	14) Find the slope with the given two points: (-1,-3), (-15,4)
15) Which line is in standard form? a) $-5x + 2y = 10$ b) $5x - 2y = 7$ c) $\frac{1}{5}x + \frac{1}{2}y = -3$ d) $3y = \frac{1}{3}x - 4$	16) Find the equation of the line in slope-intercept form with the given two points. (13, 23), (1,-1)
17) Change the equation of the line from point-slope form to standard form. $y - 7 = \frac{1}{2}(x + 4)$	18) What are the x and y intercepts of the equation in the previous question?

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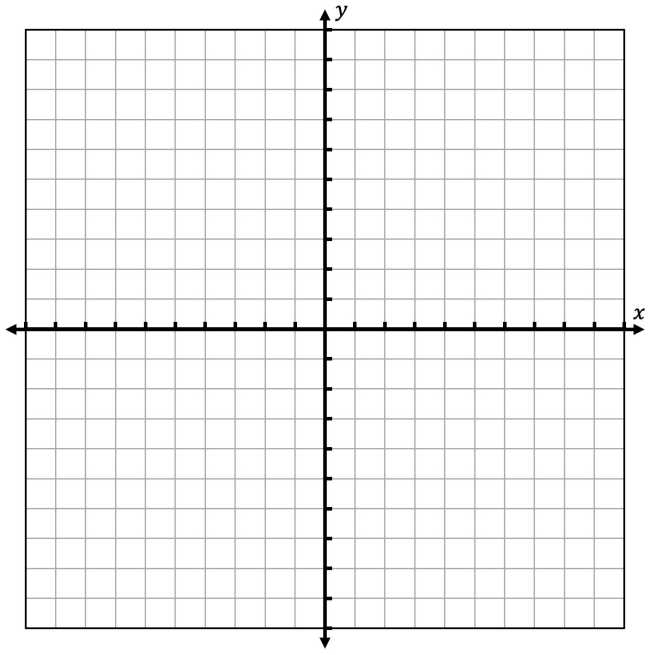
19) Graph the Linear Equation

$$y = \frac{5}{6}x + 6$$



20) Graph the Linear Equation

$$2x + 5y = 0$$



21) Find the equation of a line that passes through the point (2,3) and is parallel to the line $4x - 2y = 8$. Write the equation of the parallel line in slope intercept form.

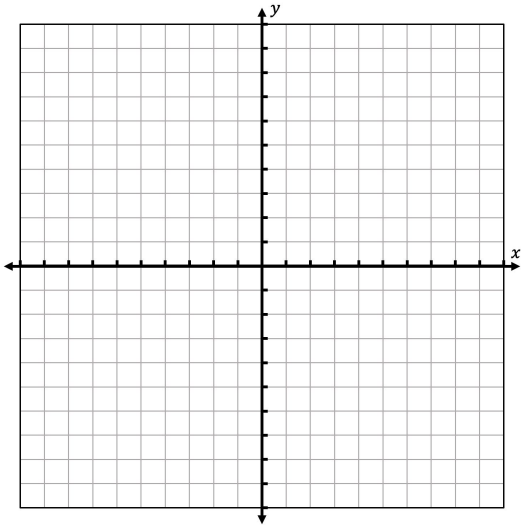
22) When put on a coordinate plane, Main Street has the equation $y = -\frac{1}{3}x - 4$

Park Street is perpendicular to Main Street and goes through the point (3,-5). Write the equation for Park Street in slope-intercept form.

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Ratios and Proportions	
23) If $\frac{a-4}{28} = \frac{1}{4}$, what is the value of a?	24) If $\frac{3x}{5} = \frac{x+2}{3}$, what is the value of x?
25) If the ratio of $\frac{1}{6} : \frac{1}{5}$ is equal to the ratio of 35 to x, what is the value of x? a) 24 b) 30 c) 36 d) 42	26) The sides of a triangle are in a ratio of 3 : 2 : 4. If the perimeter of the triangle is 27 cm, find the length of the longest side.

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Systems of Equations	
27) Solve the System of Equation by Graphing $x = 5$ $x - y = 1$  	28) Solve the System of Equations by Substitution $2x + y = -7$ $x - y = -5$
29) Solve the System of Equations by Elimination $7x + 2y = 32$ $x + 3y = 10$	30) Solve the System of Equations by the method of your choice $y = -\frac{5}{3}x - 8$ $y = x$

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Systems of Equations	
31) Which System of Equations is (9,-2) a solution to? a) $y = 3x - 5$ $8x - 5y = 35$ b) $y = \frac{5}{18}x - \frac{9}{2}$ $2x - y = 20$ c) $x + 2y = -6$ $y = \frac{3}{4}x + 8$ d) $2x - 5y = 18$ $x = -4 - 2y$	32) Deirdre can buy two sweatshirts and five t-shirts for $32.25 or she can buy five sweatshirts and two t-shirts for $46.50. How much does one sweatshirt cost, and how much does one t-shirt cost?

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Polynomials	
Perform the indicated operation.	
33) $(7y^5 + y^4 - 2y + 5) + (3y^5 - 2y^3 + 6y^2 - 8)$	34) $(-6x^4 + 10x^3 - 5x + 3) - (2x^3 - 4x^2 - 7)$
35) $(2x - 11)(5x + 3)$	36) $(x^2 + x - 12)(2x^2 - 9x + 7)$
Solve the following polynomials by factoring.	
37) $4x^2 - 169 = 0$	38) $3x^2 + 6x - 9 = 0$
39) $4x^2 + 36x + 81 = 0$	40) $x^2 - x - 6 = 0$

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41) $2x^2 - 7x - 15 = 0$

42) $4x^3 - 12x^2 - x + 3 = 0$

Solve the following two equations using the Quadratic Formula.

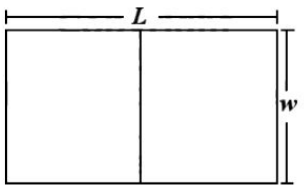
43) $3x^2 - 9x + 3 = 0$

44) $2x^2 + 4x + 4 = 0$

45) Find the discriminant of the following equation. What does the discriminant tell us about the number of solutions of the equation?

$$3x^2 - 6x + 3$$

46) A farmer bought a 1200 foot roll of fencing to enclose a pasture for his animals. He wants to make two paddocks by splitting the rectangular enclosure in half. What are the dimension he needs to make the largest enclosure possible?

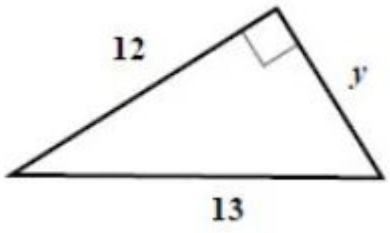
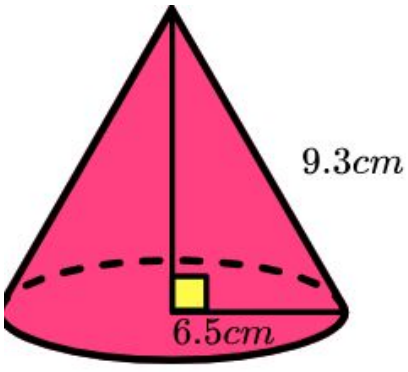


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Exponents	
47) Simplify the expression using exponent rules. $(2ab^2c^3)(5a^3b^2c)$	48) Simplify the expression using exponent rules. $\frac{4x^3y^7}{16y^8z^2}$
49) Simplify the expression using exponent rules. $(3m^4n^2)^3$	50) Simplify the expression using exponent rules. $(2r^{-3}s^4t^{-2})^{-2}$
51) Simplify the expression using exponent rules. $\frac{9x^0y^3z^4}{3y^3z^2}$	52) Simplify the expression using exponent rules. $\frac{(2rs^2)^{-3}(3s^3t^2)^2}{(3r^2st^3)^{-1}}$

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Radicals	
53) Simplify the radical. $\sqrt{1024x^4y^3z^6}$	54) Add and subtract the radicals. Simplify as much as possible. $3\sqrt{27}+5\sqrt{12}-2\sqrt{81}$
55) Multiply the radicals and simplify. $(3\sqrt{3})(2\sqrt{12})$	56) Divide the radicals and simplify. $\sqrt{\frac{16}{24}}$

Pythagorean Theorem	
57) Find y.  	58) Find the Surface Area and Volume of the Cone below. (Hint: You need to find the slant height first.) 

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AREA

Triangle	$A=\frac{1}{2}bh$
Rectangle or Parallelogram	$A=bh$
Trapezoid	$A=\frac{1}{2}(b_1+b_2)h$

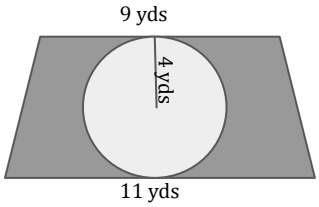
SURFACE AREA	Lateral	Total
Prism	$S=Ph$	$S=Ph+2B$
Pyramid	$S=\frac{1}{2}Pl$	$S=\frac{1}{2}Pl+B$
Cylinder	$S=2\pi rh$	$S=2\pi rh+2\pi r^2$

VOLUME

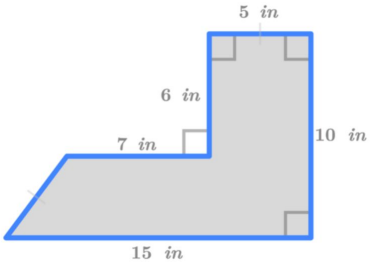
Prism or Cylinder	$V=Bh$
Pyramid or Cone	$V=\frac{1}{3}Bh$

Area and Volume

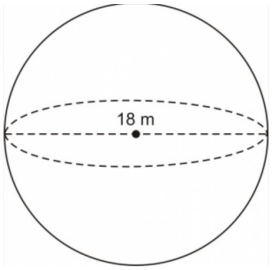
59) Find the area of the shaded region.



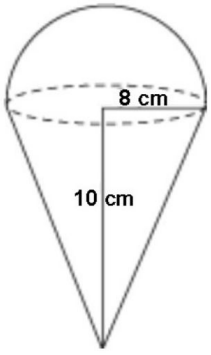
60) Find the area of the composite figure.



61) Find the volume of the figure below.



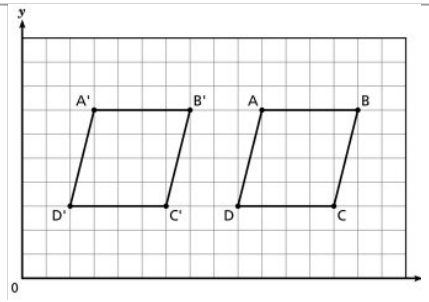
62) Find the volume of the composite figure below.



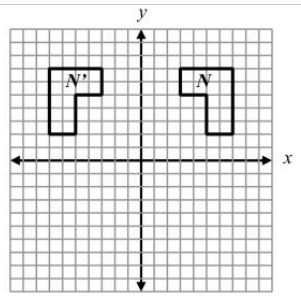
Transformations

For each figure below describe the type of transformation applied to it and state whether the images are congruent or similar. Explain your reasoning.

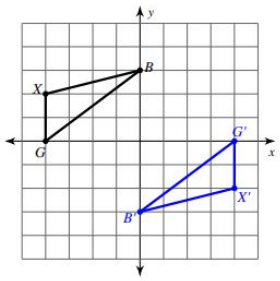
63)



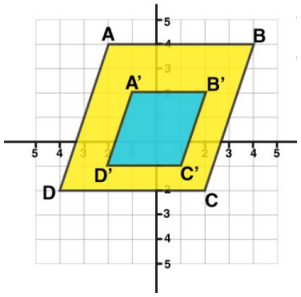
64)



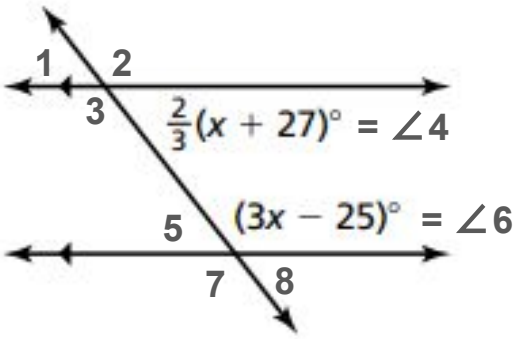
65)



66)



Angle Relationships



67) Solve for x.

68) Find the degree measure of each angle.

m∠1 =	m∠5 =
m∠2 =	m∠6 =
m∠3 =	m∠7 =
m∠4 =	m∠8 =

Answers to the Odds

1.) $3\frac{17}{20}$

3) $4\frac{7}{12}$

5) $v = \frac{7}{5}$

7) $x = -2$

9) $22\ games$

11) $22\ days$

13) $slope = \frac{-2}{3}$

15) B

17) $x - 2y = -18$

19) $graph$

21) $y = 2x - 1$

23) $a = 11$

25) D

27) $(5, 4)$

29) $(4, 2)$

31) B

33) $10y^5 + y^4 - 2y^3 + 6y^2 - 2y - 3$

35) $10x^2 - 49x - 33$

37) $x = \pm\frac{13}{2}$

39) $x = \frac{-9}{2}$

41) $x = \frac{-3}{2}, 5$

43) $x = \frac{3\pm\sqrt{5}}{2}$

45) $1\ real\ solution$

47) $10a^4b^4c^4$

49) $27m^{12}n^6$

51.) $3z^2$

53.) $32x^2yz^3\sqrt{y}$

55.) 36

57.) $y = 5$

59.) $80 - 16\pi$

61.) $972\pi m^3$

63.) $translation;\ congruent$

65.) $rotation;\ congruent$

67.) $x = 51$